WHAT IS CLAIMED IS:

1. A process for producing an SiO_2 shaped body which is at least partially vitrified, comprising sintering and/or vitrifying an amorphous, porous SiO_2 green body by contactless heating by means of radiation, wherein the radiation employed comprises a laser beam, and sintering and/or vitrifying takes place at a subatmospheric pressure below 1000 mbar.

2. The process of claim 1, wherein the subatmospheric pressure is such that any bubbles which form in the SiO_2 shaped body have a lower internal pressure than the pulling pressure used to pull a single crystal in a subsequent crystal pulling process in which said shaped body is used.

3. The process of claim 1, wherein, before a subatmospheric pressure is established, the SiO_2 green body is held in a helium atmosphere.

4. The process of claim 1, wherein said laser has a beam wavelength which is greater than the absorption edge of silica glass at 4.2 μm.

5. The process of claim 1, wherein a CO_2 laser with a beam wavelength of 10.6 μm is used.

6. The process of claim 1, wherein the amorphous, porous SiO_2 green body is in the shape of a crucible.

7. The process of claim 1, wherein the inner side and the outer side of the SiO_2 green body is irradiated by a laser beam with a focal spot diameter of about 2 cm or greater, and is thereby sintered or vitrified.

8. The process of claim 1, wherein the irradiation takes place uniformly and continuously on the respective side or sides of the green body to be sintered and/or vitrified.

9. The process of claim 1, wherein the vitrification and/or sintering of the surface of the SiO_2 green body takes place at temperature between 1000 and 2500°C.

10. The process of claim 1, wherein the vitrification and/or sintering of the surface of the SiO_2 green body takes place at temperature between 1300 and 1800°C.

11. The process of claim 1, wherein the vitrification and/or sintering of the surface of the SiO_2 green body takes place at temperature between 1400 and 1500°C.

12. The process of claim 1, wherein the laser energy is applied to the surface of the green body at an energy density of 50W/cm^2 to 500W/cm^2.

13. The process of claim 1, wherein the laser energy is applied to the surface of the green body at an energy density of 100 W/cm^2 to 200 W/cm^2.

14. The process of claim 1, wherein the temperature of the focal spot of the laser on the green body is measured, and the measurement is used to adjust process parameters such that variation in the energy density applied to the green body is reduced.

15. A process for the locally delimited vitrification and/or sintering of a porous, amorphous SiO_2 green body having an inner side and an outer side, by the process of claim 1, wherein only the inner side or only the outer side of the SiO_2 green body is irradiated in a surface-covering manner with a laser and is thereby sintered or vitrified.

16. An SiO_2 shaped body, prepared by the process of claim 15 which is completely vitrified on the inner side and has open pores on the outer side.

17. The SiO_2 shaped body of claim 16, which is a silica glass crucible for pulling silicon single crystals using the CZ process.

18. The SiO_2 shaped body of in claim 17, wherein the outer side of the silica glass crucible or a portion thereof is impregnated with one or more substances which induce or accelerate crystallization of the outer side during a subsequent CZ process.

19. An SiO_2 shaped body having an inner side and an outer side, which is completely vitrified on the outer side and has open pores on the inner side, prepared by the process of claim 1.

20. The SiO_2 shaped body of claim 16 having no more than 40 air bubbles per cm^3 taken as a mean over the entire area which has been completely vitrified, with the diameter of the air bubbles being no greater than 50 μm.

21. A device for vacuum laser sintering suitable for use in the process of claim 1, comprising: a laser, a holding device for a product to be sintered and movable in three axes, the laser and the holding device configured with a seal which seals off said holding device with respect to the outside such that subatmospheric pressure can be established therein and allows a beam from said laser to enter said holding device.

22. A device of claim 21, wherein the seal comprises a bellows.

23. The device of claim 21, wherein the seal comprises a rotary vacuum seal.

24. The device of claim 21, wherein said device comprises a vacuum chamber having a concave spherical depression therein and at least one passageway in said depression communicating with the interior of said vacuum chamber; and said seal comprises a rotary vacuum seal comprising a vacuum chamber contacting portion having a convex spherical surface which mates with the

concave spherical depression of said vacuum chamber, said seal further comprising a laser beam transparent window such that the laser light can pass through said window and through said seal and impinge upon a body contained in said vacuum chamber.